Overview of ABS Quality Program
November 2008

One of the ways the Australian Bureau of Statistics (ABS) upholds its credibility in the community is through dedicated adherence to maintaining the quality of all aspects of work and at the same time looking for ways to improve current practices.

The ABS Making Quality Visible (MQV) project is a way in which the ABS has actively taken steps to formalise the process of maintaining quality. The Methodology and Data Management Division (MDMD) has a dedicated resource managing this project, along with the support of managers throughout the division who actively promote quality initiatives within their work programs and other areas in the ABS.

This paper provides a brief overview of the quality initiatives that the ABS is currently undertaking along with a status update of progress.

Quality initiatives related to 'Processes'

Quality Gates (QGs)

Quality gates (QGs) are a tool that are designed to improve the early detection and treatment of errors within a processing cycle. They are check points at significant stages within the cycle where an assessment is made of the quality before proceeding to the next stage of the cycle. The assessments can be either of a quantitative or qualitative nature. Each quality gate includes tolerance levels, roles and responsibilities of areas involved in regards to the quality gate, along with the action required at each gate.

There has been wide acceptance of the concept of quality gates throughout the ABS and a number of areas are beginning to think about their processes and how quality gates may fit. Progress has been slow in the implementation of quality gates throughout the ABS. Part of the reason behind this is the initial development of quality gates requires time to flesh out the placement of the gates and acceptable range of results expected from the gates. However, quality gates will provide efficiency gains in the long term by identifying issues earlier than otherwise would have occurred.

Quality Infrastructure System (QIS)

The Quality Infrastructure System (QIS) is a repository which links to other corporately approved systems to allow the capture and storage of survey information to aide in the quality assurance of the entire end to end process.

Monitoring of particular aspects of a survey, whether it be response rate, relative standard errors, data items etcetera, is available within the cycle, at the end of a cycle and with comparisons over time, through the use of the QIS. This ability enables the implementation of quality assurance processes, such as quality gates, to be monitored more easily.

The automation of the loading of information into the repository means that survey areas, once loaded, can obtain up-to-date information throughout their process by logging into the QIS.

The QIS has the ability to display survey information in various output forms, such as tabular and graphical. With the addition of Notes 8, future developments into widgets on desktops, such as dashboard type information for Senior Managers, will be investigated.

Work is being undertaken this financial year to improve already existing functionality in QIS in order to promote the System more widely throughout the ABS as a key quality assurance tool.

Clearance documentation

Clearance documentation is management information that is presented at the end of the processing cycle before the release of a statistical product. This information focusses on the quality of the data for the current cycle and any changes to that quality over time. Issues that occurred during the cycle are presented in this document. For example unusual movements compared to the previous cycle will be highlighted in this document along with an explanation for why these unanticipated movements are correct. Explanations may include real world impacts that have affected the data.

The ABS has a standard Clearance Documentation template for Economics collections and work is underway on a similar standard template for Social collections.

Quality of time series

The Time Series Analysis (TSA) area of the ABS has progressed the development of training courses. The first course developed - Understanding Time Series in the ABS - has been piloted in central office (CO) and the New South Wales (NSW) office.

A second national statistical training institute (NSTI) training module which focuses on the quality assurance of seasonally adjusted and trend estimates produced during processing cycles is under development. This module is more process-oriented and will focus on how to check and interpret the log file warning messages generated from running concurrent seasonal adjustment each cycle. Improvements to these log files have also been made, including an overall summary of the cycle, and will be released into production later this year.

Work is also progressing on developing recommended content for clearance documentation relating to seasonally adjusted and trend estimates. This work, along with the NSTI training course and log file warning messages, is designed to increase the capability of client areas to quality assure their processes and to increase their understanding of the time series they are analysing.

Internally, TSA has also implemented quality gates for the Annual Seasonal Reanalyses (ASR) processes. These gates aim to ensure that all aspects of an ASR are completed thoroughly and consistently across collections.

Quality reviews

Quality reviews are a new concept within the ABS that are being piloted in 2008. The concept of these reviews was endorsed by senior managers of the ABS on the 30 October 2007. The concept for quality reviews is heavily modelled on a similar program of quality reviews in Statistics Sweden, and on the Gateway Review process administered by Department of Finance and Administration (DoFA) for large IT projects.

Quality reviews are an intensive review of a collection or a process, and are conducted over a short period of time (usually five working days). The quality review is conducted by a team of three independent reviewers from methodological, system and operational backgrounds and the findings of the review are provided to the area for which the review is being conducted, so that they can improve their processes where possible.

The first pilot review was conducted for the confidentiality procedures for International Trade statistics in January 2008. The second review was conducted in May on the Retail Trade survey. A third review will be scheduled shortly, most likely for a household collection or some other area of social statistics.

The pilot tests have revealed some issues to be addressed in the pilot quality review process, such as: clearer definition of the scope of the review; provision of a generic timetable for the reviewers to assist in the planning of the five days; the level of confidentiality that is appropriate for the final review reports; and a way of achieving a list of available panel reviewers, especially for emergency reviews.

It is intended that an evaluation report of the pilot quality reviews and recommendations will be presented to senior managers within a month of the third and final pilot review being completed.

Internal Audits

Internal audits are one of the ways the ABS ensures that our internal practices are efficient and correct. The ABS is currently conducting a top down review of our systems to identify areas of weaknesses. Areas of possible weakness identified from this review will undergo a more vigorous audit called a Quality Review (discussed above).

Quality initiatives related to 'Capability'

Quality training

MDMD is developing a suite of three NSTI courses to develop skills and knowledge relating to the making quality visible vision. These are Quality Concepts and Frameworks; Managing Statistical Risk; and Reporting Quality in the ABS. It is expected that these three courses will replace the current *Data Quality in the ABS* course.

Quality Concepts and Frameworks explains why the ABS has such a vested interest in maintaining quality and examines the different tools that have been developed to help with this direction. The course was piloted on the 31st of October 2008 in Central Office, with three attendees from Statistics New Zealand. Future presentations of this course will occur as demand dictates.

Managing Statistical Risk will discuss in detail tools which can be used by areas in the ABS to help with identifying statistical issues in the end to end process, and how to deal with any quality incidents once identified. Quality gates are one of the tools that will be discussed in detail along with documentation that is available for quality management. The course is scheduled for release in early 2009.

Reporting Quality in the ABS examines both internal and external data needs in the context of the seven dimensions of the ABS Data Quality Framework. The course primarily helps participants gain a better understanding of the creation of the content of quality declarations (discussed further below) which use the ABS Data Quality Framework. As quality initiatives evolve this course will be updated to reflect the current needs of staff.

Quality Manual

This manual is a central repository for all staff in the ABS. It contains information on a wide range of topics relating to management of the end to end cycle. It is an evolving document as more chapters will be added as developed.

The quality manual contains information on:

- the ABS Data Quality Framework;
- the Quality Declaration User Guide (a how to, and content document);
- Quality Gates;
- Quality Incident Response Plan;
- Statistics Sourced from Administrative Data; and
- A Template for quality assurance for change processes.

The ABS Data Quality Framework was developed from two international frameworks - Statistics Canada and Eurostat, to come up with the seven dimensions of data quality. These dimensions are Institutional Environment, Relevance, Timeliness, Accuracy, Coherence, Interpretability and Accessibility. These seven dimensions are used to help define the content of Quality Declarations (discussed below). Further information on the content of this framework can be found in the ABS Annual Report which is on the ABS website.

The Quality Gates section of the Quality Manual contains information on what a quality gate is, how it fits in the end to end process and how to develop them.

The Quality Incident Response Plan (QIRP) is a plan for resolving serious doubts about key statistical results. The QIRP approach is designed to provide a quick and rigorous high level response to an identified serious statistical problem and is based upon the formation of a dedicated ad hoc multidisciplinary team to investigate and resolve the issue. The process is pragmatic and focuses in quickly on the events and issues that really matter. This manual contains information on the practicalities of a QIRP, what to do and when, and recognising a QIRP in the first instance.

The Statistics Sourced from Administrative Data chapter looks at the management of the quality of statistical outputs produced from administrative data from the initial acquisition phase to final release of data.

The Template for quality assurance for change processes provides easy to follow instructions for monitoring any known change factors in a process. The template goes through the steps of identifying the known changes and then creating quality assurance procedures to manage these changes. This includes identifying risks, measures and people responsible for the monitoring.

Quality Assistant

The Quality Assistant is a database that provides links to useful information regarding quality initiatives in the ABS. It contains links to manuals, international papers and ABS specific papers. All staff are able to access the Quality Assistant from their desktops.

Quality Framework for Assessing Model-based Estimates

A quality framework for assessing model-based estimates was presented to the Methodology Advisory Committee (MAC) in June 2006. This framework contains the following dimensions: Relevance, Accuracy, Plausibility, Consistency, Robustness, Interpretability, Transparency, Endogeneity, Sustainability and Cost Efficiency. Depending on the assumptions underlying the model the importance of each of these dimensions will vary when assessing the quality of model-based estimates. It was noted in the MAC paper that the criteria set out in the framework might not be exhaustive and that depending on specific circumstances other factors may need to be taken into account in the quality assessment. Further work on the development of this framework will continue based on advice received from the MAC.

Quality initiatives related to 'Outputs'

Quality Declarations (QDs)

Quality declarations are short, sharp statements describing the quality or fitness-for-purpose of a statistical product that are designed to operate effectively in a web-based environment. They are succinct and concise pieces of information designed to convey some of the quality aspects of a particular collection using the seven dimensions of the ABS data quality framework. The presentation of information is layered so that casual users obtain a brief headline indication of quality, whilst users who are interested in more detail can easily access it. The implementation of QDs was endorsed in May 2007 and the roll-out to began in 2008 to the ABS website.

The introduction of QDs to specific ABS products increases in 2009 to include compendiums and confidentialised unit record file (CURF) releases.

Quality Page

Discussion has been held recently on the idea of developing a 'Quality' theme page on the ABS website which would provide information to users about the quality initiatives that the ABS uses in order to provide high quality data.

Endeavours to release the ABS Data Quality Framework plus other informative documentation on quality assurance practices has started, with releases to the ABS website expected from early 2009.